

REMARKS

Drawings

The drawings were objected to under 37 CFR 1.83(a) because they failed to show the shroud (in Figs 2a and 3a) in relatively air tight and frictional engagement with the inner wellbore wall as described in the description. Figures 2a and 3a have been amended to correct this defect. As can be seen in the new drawings, shroud 28 is now shown in relatively air tight and frictional engagement with the inner wellbore wall.

The drawings were objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference signs 108 and 205. Figure 2b has now been amended to show "wings or shroud" 108 and Figure 3a has been amended to show "bent sub" 205.

The drawings were objected to because Fig. 3b does not show how the compressed air (36) gets through the piston (24) to get to the venturi (34) in the inner pipe (6). In Fig. 3b, the drilling apparatus 222 is a reciprocating air hammer having a reciprocating piston (24), which is operated by air pressure. Thus, the reciprocating piston (24) can be in either an "open" position (when air is flowing) or a "closed" position (when air is not flowing). Fig. 3b shows the reciprocating piston (24) in the closed position, *i.e.*, the position it would be in just before the air reaches it. When the reciprocating piston (24) is in the closed position, the venturi (34) would also be in the "closed", *i.e.*, covered, position.

Thus, the flow of compressed air (36) through the piston (24) to the venturi (34) is not illustrated in the closed embodiment as shown in Fig. 3b. Nevertheless, if the Examiner still requires, Applicant proposes that an additional drawing be provided which shows the reciprocating piston (24) in the open position.

Examiner further objected to the drawings under 37 CFR 1.83(a) as they did not show the rotary table or top drive. Figure 4a, which is identical to old Figure 4a except for the addition of reference number 57, has now been amended to more clearly point out rotary table 57. Figure 4b has been corrected to now show top drive 59. The use of both rotary table 57 and top drive 59 to rotate directional drilling means is well known in the art. Support for the use of a rotary table or

top drive can be found at page 5 in the first two lines of the last paragraph. Thus, no new matter has been added.

Disclosure

In view of corrected Figures 4a and 4b, the disclosure has been amended accordingly to more clearly define the invention. No new matter has been added.

Double Patenting

Claims 1-13, 16-35, and 38-43 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18, 21-24, 27-40, 43-47, and 56-58 of copending Application No. 10/644,749.

Applicant will entertain a timely filing of a terminal disclaimer, if required. Please note that the conflicting application is commonly owned with the present application.

Claims Rejections – 35 USC § 102

Claims 1-7, 20, 23-25, 27, 28 and 32 were rejected under 35 U.S.C. 102(2) as being anticipated by Smet (U.S. 5,178,223).

Independent method claims 1 and 2 and independent apparatus claim 25 have been amended to more clearly define the particular embodiment of the invention sought to be protected by them. In particular, claims 1, 2 and 25 have been amended such that the concentric drill string therein consists essentially of an outer pipe, an inner pipe and an annular space between the pipes. Smet does not teach a drilling method and apparatus which uses a concentric drill string consisting essentially of an inner pipe having an inside wall and an outside wall and an outer pipe having an inside wall and an outside wall whereby the outside wall of the inner pipe and the inside wall of the outer pipe defines an annulus between the pipes.

Instead, as taught in column 1, lines 42-44, the Smet device "comprises a bundle of more than two pipes for fluid located inside a protective casing" [emphasis added]. This can be seen more clearly in Figure 2. Member 4 in Figure 2, which is the Smet drill string, is described in the specification as "a bundle of hoses 4" where "[t]he bundle is formed by a flexible casing 5 in

which a number of flexible tubes are situated, namely a central hose **6**, two high pressure hoses **7** and five low pressure hoses **8**" [see column 3, lines 11-15, emphasis added]. Thus, Smet does not teach a drill string consisting essentially of only an outer pipe and an inner pipe.

There are definite commercial advantages in having a drill string that consists essentially of only two concentric pipes. For example, such a drill string would be simpler to manufacture, easier to operate, less likely to require replacement of parts (*i.e.* as opposed to Smet where there is a plurality of hoses which may need to be replaced from time to time) and thus much easier to maintain. Finally, quality control would likely be much easier.

In summary, the particular embodiment of the invention in claims 1, 2 and 25 is clearly patentably distinguishable over Smet. Thus, dependent claims 3-7, 20, 23, 24, 27, 28 and 32 are also not anticipated by this prior art reference.

Favorable reconsideration of claims 1-7, 20, 23-25, 27, 28 and 32 (as amended) is respectfully requested.

Claim Rejections – 35 U.S.C. 103

Claims 12, 14, 33, and 36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Smet in view of Gray (U.S. 6,109,370).

Claims 12 and 14 are dependant on method claims 1 and 2 (as amended) and claims 33 and 36 are dependent on apparatus claim 25 (as amended). As stated above, Smet does not teach a drilling method and apparatus which uses a concentric drill string consisting essentially of an inner pipe having an inside wall and an outside wall and an outer pipe having an inside wall and an outside wall whereby the outside wall of the inner pipe and the inside wall of the outer pipe defines an annulus between the pipes. Neither does Gray. Thus, modifying Smet with the addition of a bent sub or housing as a steering means as taught by Gray would not result in the invention as claimed in claims 12, 15, 33 and 36.

Favorable reconsideration of claims 12, 15, 33 and 36 is respectfully requested.

Claim Rejections – 35 U.S.C. 103

Claims 16 and 38 were rejected under 35 U.S.C. 103(a) as being unpatentable over Smet in view of Dorel (U.S. 6,047,784).

Claim 16 is dependant on method claims 1 and 2 (as amended) and claim 38 is dependent on apparatus claim 25 (as amended). As stated above, Smet does not teach a drilling method and apparatus which uses a concentric drill string consisting essentially of an inner pipe having an inside wall and an outside wall and an outer pipe having an inside wall and an outside wall whereby the outside wall of the inner pipe and the inside wall of the outer pipe defines an annulus between the pipes. Neither does Dorel. Thus, modifying Smet to use drilling mud by adding a mud motor to rotate a bit and a bent sub as a steering means as taught by Dorel would not result in the invention as claimed in claims 16 and 38.

Favorable reconsideration of claims 16 and 38 is respectfully requested.

Claim Rejections – 35 U.S.C. 103

Claims 22 and 43 were rejected under 35 U.S.C. 103(a) as being unpatentable over Smet in view of Sinclair (U.S. 5,199,515).

Claims 22 is dependent on method claims 1 and 2 (as amended) and claim 43 is dependent on apparatus claim 25 (as amended). As stated above, Smet does not teach a drilling method and apparatus which uses a concentric drill string consisting essentially of an inner pipe having an inside wall and an outside wall and an outer pipe having an inside wall and an outside wall whereby the outside wall of the inner pipe and the inside wall of the outer pipe defines an annulus between the pipes. Neither does Sinclair. Thus, modifying Smet to have a suction compressor as taught by Sinclair would not result in the invention as claimed in claims 22 and 43.

Favorable reconsideration of claims 22 and 43 is respectfully requested.

New Claims

New independent claim 44 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising delivering drilling medium through the inner pipe and extracting exhaust drilling medium through the annulus between the inner pipe and the outer pipe. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 45 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a downhole flow control means positioned at or near the directional drilling means, for preventing a flow of hydrocarbons from the inner pipe or the annulus or both to the surface of the wellbore by operation of said downhole flow control means. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 46 and claims 47-48 dependent thereon are directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a surface flow control means positioned at or near the surface of the wellbore for preventing the flow of hydrocarbons from a space between the outside wall of the outer pipe and a wall of the wellbore. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of these claims is requested.

New independent claim 49 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a directional drilling means comprising a rotary drill bit, a rotary table or top drive drilling system and a bent sub or housing and delivering a drilling medium comprising air. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 50 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a directional drilling means comprising a drill bit, a reverse circulating steerable downhole air motor and a bent sub or housing and delivering a drilling medium comprising air. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 51 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a directional drilling means comprising a drill bit, a reverse circulating mud motor and a bent sub or housing and delivering a drilling medium comprising drilling mud. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 52 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a directional drilling means comprising a reverse circulating reciprocating air hammer, a drill bit and a bent sub or housing and using a drilling medium comprising air. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 53 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a directional drilling means comprising a drill bit, a rotary table or top drive drilling system and a bent sub or housing and delivering a drilling medium selected from the group consisting of drilling mud, drilling fluid and a mixture of drilling fluid and gas. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 54 is directed to a method for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising, among other steps, providing a shroud means positioned between the outside wall of the outer pipe and a wall of the wellbore for preventing the release of exhaust drilling medium into the hydrocarbon formation. None of the prior art cited by the Examiner teach such a method. Thus, favorable consideration of this claim is requested.

New independent claim 55 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a bottomhole assembly comprising a downhole flow control means positioned at or near the directional drilling means for preventing a flow of hydrocarbons from the inner pipe or the annulus or both to the surface of the wellbore. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

New independent claim 56 and claims 57-58 dependent thereon are directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a surface flow control means positioned at or near the surface of the wellbore for preventing flow of hydrocarbons from the a space between the outside wall of the outer pipe and a wall of the wellbore. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of these claims is requested.

New independent claim 59 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a directional drilling means comprising a reverse circulating reciprocating air hammer, a drill bit and a bent sub or housing, and a drilling medium delivery means for delivering drilling medium comprising air. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

New independent claim 60 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a directional drilling means comprising a rotary drill bit, a rotary table top or top drive system and a bent sub or housing, and a drilling medium delivery means for delivering drilling medium comprising air. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

New independent claim 61 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a directional drilling means comprising a drill bit, a reverse circulating steerable downhole air motor and a bent sub or housing, and a drilling medium delivery means for delivering drilling medium comprising air. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

New independent claim 62 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a directional drilling means comprising a drill bit, a reverse circulating downhole mud motor and a bent sub or housing, and a drilling medium delivery means for delivering drilling medium comprising drilling mud. None

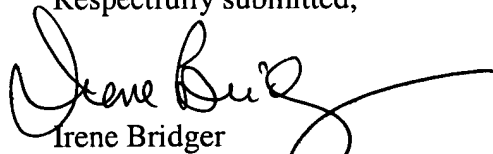
of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

New independent claim 63 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a directional drilling means comprising a drill bit, a rotary table top or top drive system and a bent sub or housing, and a drilling medium delivery means for delivering drilling medium selected from the group consisting of drilling mud, drilling fluid and a mixture of drilling fluid and gas. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

New independent claim 64 is directed to an apparatus for drilling a directional or horizontal wellbore in a hydrocarbon formation comprising a shroud means positioned between the outside wall of the outer pipe and a wall of the wellbore for preventing the release of drilling medium or entrained drill cuttings or both outside the concentric drill string and into the formation. None of the prior art cited by the Examiner teach such an apparatus. Thus, favorable consideration of this claim is requested.

In view of the arguments presented by Applicant herein, Applicant submits that claims 1 to 64 are in a condition for allowance and such allowance is respectfully requested.

Respectfully submitted,


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IN THE DRAWINGS

Cancel Figures 1-12 presently on file and substitute therefor new Figures 1-12 submitted herewith.